

POLITECNICO DI TORINO  
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***Honors theses***

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**Urban redevelopment project in Rwanda: the case of Urukundo village**

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Rwanda is a young country, deeply marked by the historical events, where globalization has got the upper hand. The society is prevalently rural, lives in houses which are scattered on the territory and practices a subsistence agriculture. Although very small, Rwanda is the most populated country in Africa, with 11 million inhabitants, and is expected to reach 15 million in 2020; therefore there are many policy actions that aim at transforming Rwanda into a competitive country. The capital Kigali is becoming a modern-looking town, in strong expansion. The growth of industries, infrastructures and public facilities, has provided new employment opportunities, and has attracted poor people who settled on the outskirts, giving rise to densely-populated informal neighborhoods. These don't reflect the idea of a modern country, because they are built with poor materials. For this reason the government began to expropriate these areas for the creation of new well-planned districts for a wealthier class.

The project area is part of the city of Kigali. It is an informal neighborhood, the Urukundo, located at the foot of a hill. It's closed between two roads that mark the boundaries, with a vast green area on the north, and bordering with districts that have been transformed.

His destiny is to be razed, and its inhabitants will be expropriated.

Urukundo has no public facilities, services or valid social gathering spaces: schools, churches, hospitals, markets are located in the neighboring villages, and this is why the informality of the neighborhood is reflected also in the social dynamics: the roads become the easier spaces for aggregation.

Inside the village there are narrow small passages, between the buildings, made of poor materials, traditional techniques and imported materials such as sheet iron.

Water availability is limited: the inhabitants draw off the groundwater down the hill, where uncontrolled discharging of grey and waste water converge. Water naturally flows along the slope of the hill, causing a considerable erosion.

Urukundo is inhabited mostly by a community of Twa, deeply rooted in this area for the presence of clay with which they make ceramic pots in a cooperative, which has recently started the production of ceramic water filters, with the help of international sponsors.

To prevent the expropriation of the inhabitants, we propose a redevelopment that gives the village a unique character, preserving the existing culture and community, supporting the presence of the cooperative and providing the infrastructure they need to meet the modernization of Kigali.

The project is based on the superposition of three layers:

- the creation of paths crossing the village and public spaces
- a better management of water resources
- new homes



Plan and view of new major way integrated with existing buildings

To realize the paths we started from the creation of a sewerage system, as an infrastructure to stabilize the built fabric, so the idea of redevelopment won't be so weak to the current political transformation.

According to the morphology of the village we have suggested the creation of three major sewer trunk that divide the village into three zones; we focused on one zone assuming for this a project also applicable to the other two.

The creation of the sewer system includes a demolition to give space to a main way on which overlooked new housing and services (a school in the valley, a market at the new access driveway and a multipurpose room in the center).

Along these three poles, public water collection points arise in succession, and become spaces of aggregation.

Grey and black water are monitored all the way.

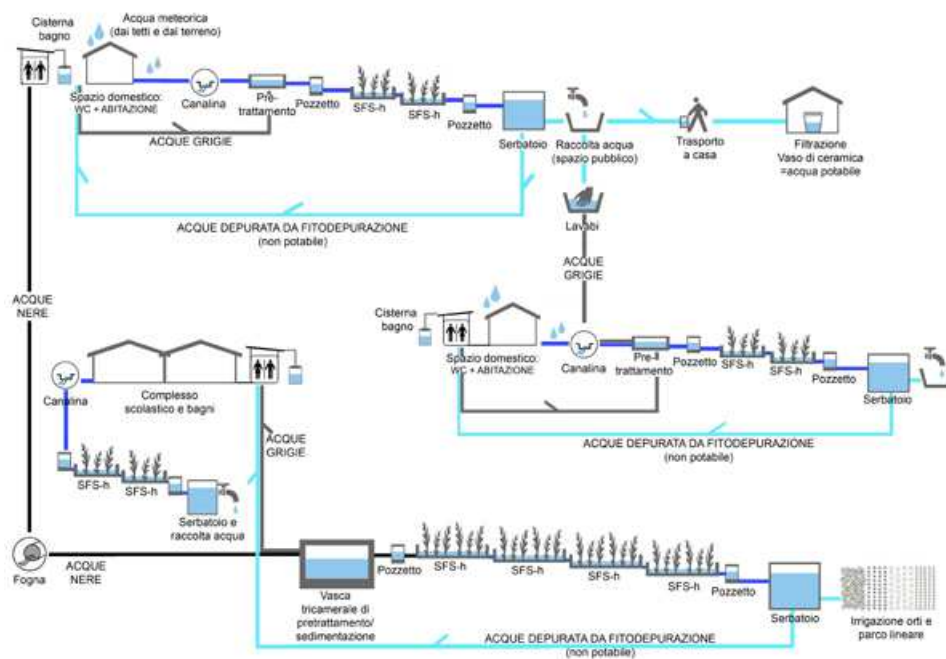
The roofs and the ground surfaces are collectors of rainwater, which is directed into micro areas of reed beds, where it is purified and immediately stored in tanks, where it can be drawn by the people or pumped to sanitary toilets.

The phytodepuration technique combined with local ceramic water filters provide clear water.

Gray water from toilets and from domestic uses are canalized toward the next treatment area. The cascade system is repeated for each level of the project and ends with a sewage treatment in the valley.

At the end of its cycle, the water can be used for garden's irrigation.

We designed all the system to free people from dependence of groundwater and to ensure clear water and hygiene.



Scheme of water cycle

New houses (with two floors to maintain high population density) are arranged on different levels between which there are ways that relate to the surroundings. The toilets are separated from the house and form a block shared by a group of families. House entrance is through the veranda, designed as an exterior extension of the house, becoming a place for social gathering, or a point to sale and show local products for an informal business.

The ground floor of the house is built with compressed earth blocks, while the second floor, is lighter, and has a bamboo structure that supports the bamboo panels and the steel roof.

To make the project sustainable, we didn't use any wood, which is preserved because of deforestation, neither steel, nor the traditional techniques (like adobe and torchis) banned by the government.



Section and photos of the project

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